A Formula for reducing Precession in Right Ascension and Declination from Bessel's to Struve's Constants. By Professor Dr. A. Krueger, Director of the Observatory, Gotha.

Denoting by p_o and q_o the precession of a star in R.A. and Decl. computed with the constants of Bessel, viz.:

$$m = 46''.04370, \quad n = 20''.05960 \quad \text{for} \quad 1800$$
$$= 46''.07456, \quad = 20''.04990 \quad ,, \quad 1900$$

and by p, q the precessions of the same star according to Struve's constants, viz.:

$$m = 46''.06230, \quad n = 20''.06070 \quad \text{for} \quad 1800$$
$$= 46''.09079, \quad = 20''.05207 \quad ,, \quad 1900$$

the following formula will give the reduction from Bessel to Struve:

$$p - p_o = +0^s.001072 + 0^s.000054837\, p_o \quad \text{for} \quad 1800$$
$$= +0^s.000750 + 0^s.000108227\, p_o \quad ,, \quad 1900$$

$$q - q_o = +0^s.000054837\, q_o \quad \text{for} \quad 1800$$
$$= +0^s.000108227\, q_o \quad ,, \quad 1900$$

or,

		Factor.	Diff.
1800	$p - p_o = +0^s.00107 + 0^s.0005484\, p_o$	1 : 18236	1618
1810	$+0^s.00104 + 0^s.0006018\, p_o$	1 : 16618	1354
1820	$+0^s.00101 + 0^s.0006551\, p_o$	1 : 15264	1150
1830	$+0^s.00098 + 0^s.0007085\, p_o$	1 : 14114	789
1840	$+0^s.00094 + 0^s.00007619\, p_o$	1 : 13125	860
1850	$+0^s.00091 + 0^s.00008153\, p_o$	1 : 12265	754
1860	$+0^s.00088 + 0^s.00008687\, p_o$	1 : 11511	666
1870	$+0^s.00085 + 0^s.00009221\, p_o$	1 : 10845	594
1880	$+0^s.00081 + 0^s.00009755\, p_o$	1 : 10251	532
1890	$+0^s.00078 + 0^s.00010289\, p_o$	1 : 9719	479
1900	$+0^s.00075 + 0^s.00010823\, p_o$	1 : 9240	

For $q - q_o$ the precession q_o is to be corrected by the same factor.

Example: $\alpha = 2^h\ 0^m\ 0^s$ $\delta = +88^\circ\ 0'$ for 1825; by direct computation.

$$p_o = +22^s.2155, \quad q_o = +17''.3700 \quad \text{Bessel}$$
$$p = +22^s.2180, \quad q = +17''.3712 \quad \text{Struve.}$$

By formula, the factor being 1 : 14656,

$$p - p_o = +0^s.0010 + 0^s.0025 = +0^s.0035$$
$$q - q_o = +0''.0012$$

Gotha, 1879, *Feb.* 10.

Les longueurs du pendule à secondes à Poulkova, à St.-Pétersbourg et aux différents points de la Russie occidentale, corrigées de l'influence produite par la flexion des supports du pendule construits par M. Repsold. Par M. A. Savitsch, Professeur d'Astronomie à l'Université de St.-Pétersbourg.*

(*Abstract.*)

The paper is a sequel to the author's Memoir presented to the Royal Astronomical Society in 1872, and printed in their *Memoirs*, vol. xxxix., pp. 19–29. By the aid of the researches of Peirce, Cellerier, and Plantamour in regard to the flexibility of the supports of the pendulums as constructed by M. Repsold, he is at present able to give the lengths of the seconds pendulum for different points of Western Russia with more precision than in his Memoir of 1872. The corrected results are :—

Station.	Latitude N.			Longitude E. of Greenwich.			Length of Seconds Pendulum in Paris lines.
	°	′	″	h	m	s	
Tornea	65	50	43	1	36	54	441·2460
Nicolaistadt	63	5	33	1	26	26	441·1228
St. Petersburg	59	56	30	2	1	14	441·0254
Revel	59	26	37	1	39	1	441·0125
Dorpat	58	22	47	1	46	54	440·9697
Jacobstadt	56	30	3	1	43	4	440·8835
Vilna	54	41	2	1	41	12	440·8288
Belin	52	2	22	1	40	52	440·7203
Krementz	50	6	8	1	42	54	440·6467
Kamenetz-Podolsk	48	4	39	1	46	18	440·5778
Kischeneb	47	1	30	1	55	18	440·5212
Ismail	45	20	34	1	55	16	440·4413

* The Memoir will be printed *in extenso* in the *Memoirs* of the Society.—Ed.